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ABSTRACT

This report summarizes a five-volume research report on the classroom use and impact of ThinkAbout, an instructional television series designed to strengthen the reasoning skills of fifth and sixth graders and to review and reinforce language arts, mathematics, and study skills. It describes results of a 1979-80 research study which used three complementary methods of determining classroom use and impact: student testing in 241 classrooms in Iowa, Mississippi, Oregon, and Pennsylvania; four questionnaire surveys of teachers, of which over 2,000 were returned; and case studies. The results reported indicate that (1) the most striking program impact was on the curriculum in the user classrooms, in that topics were addressed that ordinarily were not covered in the fifth and sixth grades; (2) the series was used in varied ways with varied results; (3) the school and classroom context of instructional television affects its introduction and use; (4) internal organizers and outside support materials were necessary for reinforcement; and (5) additional teacher inservice work is needed. Summaries of three case studies, drawn from the second volume of the report, are included. (Author/LMM)

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Research on the Introduction, Use, and Impact of the **ThinkAbout** Instructional Television Series

Executive Summary

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RESEARCH ON THE INTRODUCTION, USE, AND IMPACT OF THE THINKABOUT INSTRUCTIONAL TELEVISION SERIES

EXECUTIVE SUMMARY

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Evaluation Center

Western Michigan University

January 1982

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Background

About ThinkAbout

ThinkAbout is a series of 60 15-minute programs designed to strengthen the reasoning skills of fifth and sixth graders. It also aims to reinforce language arts, mathematics, and study skills by focusing on their common denominator--thinking. ThinkAbout was developed by a consortium of 48 state and provincial education and television agencies under the direction of the Agency for Instructional Television. Additional financial support was provided by the Corporation for Public Broadcasting and the Exxon Corporation.

The goal of ThinkAbout is to encourage the development of learners who can (1) express themselves effectively, (2) manage their own learning, (3) reason systematically, and (4) think flexibly. Each ThinkAbout program is designed to be used in any of various ways--as a vehicle for promoting thinking skills in a problem-solving context, as a means of teaching problem-solving techniques, or as a stimulus for reviewing specific language arts, mathematics, or study skills.

The programs are organized in 13 clusters, with special, unrelated programs interspersed between them. The clusters focus on general thinking skills, such as finding alternatives, using criteria, and collecting information. Some of the special programs deal with problem-solving aids, such as goal setting, and others provide complex problems for students to investigate after viewing.

ThinkAbout was designed for versatile use--by program, by cluster,

or as a comprehensive series. The research to be summarized here deals with its introduction, use, and impact as a comprehensive series.

About the Research

This research had its inception early in the Skills Essential to Learning Project. During the stage of instructional and content design, the representatives of many consortium agencies expressed great interest in how and to what effect this large curriculum project would be incorporated into diverse classrooms. Accordingly, the formative evaluation of ThinkAbout during its development included studies of reactions to individual programs, and even to clusters. But studies of the classroom use and the impact of the series had to await its first year of use.

The approach taken in this research developed out of discussions among representatives of the ThinkAbout consortium agencies, members of the AIT staff associated with ThinkAbout, and researchers in education and television. Early in the discussions, it became clear that to study all the political and educational questions raised by these groups would demand research well beyond the resources of the project. In reducing the number of questions to manageable size, several of them had to be rejected or deferred. The questions finally chosen were those which recurred most often, seemed most important to the primary audience for this report, and, when taken together, formed a coherent set of studies.

This research is not a summative evaluation of ThinkAbout and does not assess the value of its curriculum for potential consumers. The members of the consortium supporting the series (and also supporting this research) have already decided on the value of the curriculum for classrooms in their jurisdiction. Rather, the aims of this research are those of enlightenment, guidance in the use of ThinkAbout, and planning for

school television in general.

This research is reported in a total of five volumes:

Vol. I: Technical Report

Vol. II: ThinkAbout: Teacher Use and Student Response in Three Classrooms, by Marilyn R. Cohn

Vol. III: Toward a Clear Picture of ThinkAbout: An Account of Classroom Use, by Sylvia Hart-Landsberg

Vol. IV: A View of Viewers: Observations on the Response to and Classroom Use of ThinkAbout, a Program Produced by the Agency for Instructional Television, by Harry F. Wolcott

Vol. V: Appendices to Technical Report.

Vols. II-IV are reports of case studies conducted in classrooms where ThinkAbout was used.

The Research Questions

The discussions among the consortium representatives, the AIT staff, and the researchers identified two types of research to be undertaken in ThinkAbout's first year of distribution: (1) research on its introduction and use, and (2) research on its impact.

(1) Introduction and use research: How is ThinkAbout used during its first year? Who made the decision to adopt it into the curriculum? What can be learned about the use of television in the classroom that may aid in the design and production of future series? Are there any barriers or aids to the effective use of instructional television in schools?

Data on these questions were obtained through observations, interviews, and surveys.

(2) Impact research: What are the perceived and measurable effects of the series? How much change can be seen in students with respect to the series' basic goals? Is there any relationship between use patterns and impact? Do certain kinds of teachers and students find the series more useful than others do?

Data on these questions were obtained through observations, interviews, surveys, and tests.

The Research Process

To answer the questions listed above, three research methods were selected--testing studies, surveys, and case studies. They complemented each other: each could answer some but not all of the questions, and each set of results helped in interpreting the others. In addition, using more than one method enabled the researchers to verify their findings.

The first method, testing, was used in 241 volunteer classrooms in four consortium states (Iowa, Mississippi, Oregon, and Pennsylvania). Tests were given to all the classes in fall 1979 and again in spring 1980, and to half of them in winter 1980. Half of the volunteer classrooms in each state were fifth grade classrooms and half were sixth grade; half were using ThinkAbout and half were not. They had been selected by the consortium as representative of ThinkAbout users and nonusers. No single, or "best," method of use had been prescribed to them.

The tests given were of several kinds. The first was an experimental set of problem-solving exercises, developed by Dr. Martin Covington of the University of California at Berkeley. These were designed to examine the unique goals and outcomes of the series. In asking students to demonstrate how they would handle specific problems, the exercises required the use of (1) systematic reasoning, (2) communications skills, and (3) independent learning.

A typical exercise in systematic reasoning contained a short story problem, followed by questions such as:

> What is the problem? Write it below.
>
> What are some of the things that might be done to solve the problem? Write them below.
>
> Given the following ideas why the problem occurred, what things might be done to check them? Write your answers below.

A typical exercise in communications skills contained a short description of a dangerous situation, followed by directions and questions such as:

> List the groups that should be warned about the danger and tell how you would warn them.
>
> What things should you do to prepare a speech for a kindergarten class about the danger, and to give the speech?

A typical exercise in independent learning contained a short description of a project to be completed, followed by directions and questions such as:

> List, in order, the steps that must be taken to complete the project.
>
> What are some of the things you might do if you found that your deadline was sooner than you thought?

In addition to the problem exercises, Covington developed a scale for measuring attitudes toward problem solving. Using the scale, students were asked to agree or disagree with statements such as:

> I think I have the makings of a really creative thinker.
>
> Suggesting an idea that later turns out to be wrong wastes time and holds things up.
>
> A good thinker usually sees the answer to a problem before most other people do.

Like the problem exercises, the attitude scale was designed to examine the unique goals of ThinkAbout. Both were intended to be administered experimentally during the series' first year of use, and then analyzed and reformulated for succeeding years.

Besides the impact of ThinkAbout with respect to its goals, many of the consortium agencies expressed a strong interest in its impact with respect to standardized test scores. Accordingly, the Evaluation Center conducted an analysis of more than 50 such tests, all widely available. The content of their scales and items was compared with the objectives

of the ThinkAbout programs and clusters in order to identify any overlaps. The greatest amount of overlap that was discovered was with the Comprehensive Test of Basic Skills (CTBS). As a result, the following subtests were added to the researchers' test package: reading comprehension, language expression, mathematics concepts, mathematics applications, reference skills, science, and social studies.

The teachers who participated in the testing provided classroom demographic information at the beginning of the school year; those who viewed ThinkAbout also provided utilization information at the end of the year. These data proved useful in interpreting the test results.

The second method used in this research was the survey. In all, four questionnaire surveys were conducted--the first in November 1979, the second in January 1980, the third in March 1980, and the fourth in May 1980. All were mailed to teachers in consortium states and provinces. Each questionnaire dealt, in two pages, with different aspects of the series' adoption and use: among other things, how the teachers had come to use ThinkAbout, what teaching practices they associated with its use, what their reactions to it and those of their students were, whether they were satisfied with it, and how they perceived its impact on their students.

The surveys were designed not to determine the size of ThinkAbout's audience but to examine the nature of its use. Hence, the sample selected was not a probability sample of the user population. Mail lists were developed jointly with consortium agencies, television stations, and AIT to identify likely ThinkAbout users.

During the year, well over 2,000 completed questionnaires were returned from 37 states and provinces. The response rates ranged

between 53% and 70%, with one follow-up mailing.

While the first research method focused on student performance and the second on teacher reports, the third focused on the classroom as a whole, including teaching processes and other situational factors that may have affected the use of the series. Three experienced ethnographic researchers conducted long-term naturalistic case studies (in Oregon and Missouri) of schools and classrooms where ThinkAbout was being used. The resulting reports contain a wealth of information, in the form of observations and interviews, about such things as the following: how teachers and others learned about the series, the process of adoption and adaptation, patterns of use, lessons that incorporated ThinkAbout, its impact on student and teacher behavior, and its impact on the curriculum.

These three complementary methods--testing, surveys, and case studies--provided different perspectives on the same phenomenon, the field use of ThinkAbout in its first year of availability. Each method had its strengths and weaknesses, both of which must be considered in interpreting the research findings. The most salient of them included:

	Testing	Surveys	Case Studies
Strengths	--the participating classrooms were large in number and widespread geographically; they included both user and nonuser classrooms. --multiple testing instruments were used; data on the classroom process were gathered. --test data were collected three times during the year.	--a large number of teachers and students responded. --a large number of issues was addressed. --surveys were conducted four times during the year.	--holistic reports of experiences with the series in classrooms were generated. --classrooms in different settings were examined. --a wide range of issues and variables was addressed.

Weaknesses	--only volunteer classrooms were used. --no pilot testing in user classrooms was possible. --the logistics of testing through the year were disruptive for the classrooms.	--the sampling procedure limits generalizability. --not all users could be identified for the mailing list. --not all issues listed could be addressed by the surveys.	--the number of sites and observers was limited. --the only classrooms studied were those whose teachers were willing to open them up to outsiders. --it is uncertain to what extent the findings will be applicable elsewhere.

The Research Findings

The full technical report on this research contains a vast amount of detailed information, only a small part of which can be included in the following few pages. Interested readers are encouraged to turn to the report.

Introduction and Use

The following observations on the introduction and use of ThinkAbout were derived from the data collected in the surveys and case studies:

The educators who made the decision to use ThinkAbout were the teachers themselves. They had heard about it in promotional material mailed to them (90%), in workshops (24%), and in their own school districts. Before committing themselves to the series, however, they tended to check the reactions of their students to it. Seventy-six percent indicated that their students encouraged or strongly encouraged the use of the series.

A profile of the teachers who decided to use ThinkAbout during its first year, taken from the four surveys, revealed the following characteristics:

> Most of the teachers had used school television in 1978-79 and were using other school television series concurrently with ThinkAbout in 1979-80.
>
> Most of the teachers were from small towns and suburban school districts.

Supplement

The following summaries of cases from Marilyn Cohn's study (Vol. II of the report) provide a sample of the information contained in the three case study reports (Vols. II-IV).

Ms. Church

Ms. Church's school district is in an upper middleclass area, where the problems are not reductions in student population but are the conflicts between teachers and administrators. It is a place where a strong union is feeding on feelings of teacher helplessness. Parents and administrators push the back-to-basics movement that makes the teachers responsible for closely monitoring student performance.

The school building is late 60's modern but it is traditionally organized and traditionally decorated--from the principal's office to the classrooms. Ms. Church, a thirteen year veteran, is one of four fifth grade teachers. She personifies the experienced teacher struggling against what is currently labeled as "teacher burn-out."

Ms. Church is comfortable emphasizing the basic skills of reading, math, and spelling but disagrees with including science and social studies in her district's Fundamental Skills Program. She also does not feel entirely comfortable with the recently introduced practice of holding teachers accountable for their students' test scores. Ms. Church has begun to focus her energies on her non-teaching activities, particularly the teacher union, and reducing the time she devotes to lesson preparation.

Ms. Church learned about ThinkAbout at a State Department of Education workshop, last August. She immediately asked for and became her district's representative to further ThinkAbout workshops and through her, the principal and other teachers became familiar with and interested in ThinkAbout.

Ms. Church's 22 fifth grade charges are polite and obedient in her classroom, a place where everything has its place and everyone has a job. Her classroom is quiet and predictable, with the daily schedule written on the board--Spelling, Language Arts, Reading, Math--all in the morning, interrupted twice a week by ThinkAbout at 1:00. More of the Math, Social Studies or Science lead up to the closing rituals with little variation from day-to-day. Spelling, Reading and Math are the core. The Science and Social Studies segments, while on the list, rarely occur.

Ms. Church follows the text faithfully. The rules are in there, never skip, never modify. Relationships between various subjects are rarely ever drawn. The emphasis is on the mechanics and the process of teaching and testing. At her principal's behest, mastery learning is the preferred approach. She works closely with the duplicating machine--pretest, skills lesson, workbook practice, posttest, review exercises, and finally, a mastery test. Skills booklets and worksheets are her curriculum.

Acceptance and a lack of questioning are in fact trademarks of Ms. Church's classroom. The children unquestioningly accept not only the work and the routine, but the teacher as the ultimate and legitimate authority in all areas. Ms. Church seems equally unquestioning and accepting of her teaching and management style. She is comfortable with her routine, her authoritarian status. She can embrace the mastery approach and feels secure in her total reliance on teacher manuals.

Ms. Church's classroom saw most of the sixty ThinkAbout programs, viewing them from the broadcasts of the Public Television station. Ms. Church could have viewed the programs she missed by taking her students to a cassette machine outside of the principal's office; but she chose not to, because of the time and logistics involved.

Ms. Church did no advanced preparation for the ThinkAbout programs. In fact, one of the reasons she gives for her frequent use of instructional TV in general, is that it requires no prior planning. She expects explicit directions in the Teacher's Guide. "I like it to let me know exactly what to do. If I have to come up with all those ideas on my own, then it's just as easy for me to use the textbook or use a film or something."

At about 5 mirutes to 1:00 she would ask a student to wheel the set in from the hallway. The children scooted their chairs to the front of the room. Ms. Church put down her math book and reached for her Teacher's Guide. She would read directly from the "before the program" section, taking one or two minutes to introduce the lesson. Only the specific program was introduced; no reference was made to the cluster of related programs or to other work her class was doing.

While the program was in progress Ms. Church alternately watched the screen and scanned the "after the program" section of the guide. The children, meanwhile were totally engrossed, laughed and cheered appropriately, and often sighed in disappointment when the programs were over.

Ms. Church was as religious about the post-viewing discussion as she was about the introduction of the program. She held a regular ten-minute discussion immediately after the program, and followed the exact procedures in the Teacher's Guide. Children exhibited far more interest in having their turns to talk than in listening; answers did not always correspond to questions nor extend the remarks of a previous speaker. Grasping the program concept was not as important as completing all the guide questions, and Ms. Church, looking to get through the questions was not interested in clarifying the confused mind. As she posed her questions, the magic of television disappeared, chairs were moved back to desks, a little restlessness appeared and the rules of the classroom took over. ThinkAbout had its period and now it was time to move on to more worksheets.

Ms. Church said,

> "I love the program--my children love the program--I think it's excellent . . . they have a lot of skills that are very basic, they deal with thinking, problem-solving and communications and these are the skills that the children are going to need in everyday life."

Mr. Cartwright

Although Mr. Cartwright was certified as an elementary school generalist, he is currently teaching 6th grade social studies and science in a departmentalized, predominantly Black, suburban middle school. Because he finds teaching "exciting" and 6th graders "fascinating," he puts extraordinary amounts of time and energy into preparation for his classes. Drawing on a variety of sources and his own creativity, he develops unique lessons in great detail and then internalizes them so completely that he never uses a note. Regardless of subject matter or grade level, his over-arching goals for students are the ability to think and to clarify their own values.

From 8:30 to 11:10 each morning, Mr. Cartwright teaches his three social studies classes back to back. The curriculum, a series of large units such as communications, religion, and map reading, is basically the same for each group. Unlike the 7th grade social studies teachers who are "required" to correlate their curriculum with the content on the 8th grade competency test, Mr. Cartwright feels considerable freedom in developing his units. Individual lessons vary greatly, but, whatever the format, Mr. Cartwright consistently asks open-ended high level questions, and presses for well developed and thoughtful answers.

In all teacher-led discussions, comments like "you've got a good idea--keep going--think it through" or "come on, follow that idea up" or "you can figure it out--this is not above you" were commonplace. Mr. Cartwright tries to link individual sessions to larger themes, and demonstrates an interest in the "whole child" rather than the child as student. His students are, for the most part, a lively, restless bunch, and thus, in addition to planning interesting lessons, Mr. Cartwright often has to function as an entertainer in order to capture and keep attention.

After attending a district workshop on ThinkAbout in October, Mr. Cartwright began to incorporate ThinkAbout in his social studies curriculum, but on a highly selective basis. In November and December he chose four programs and showed them as a "change of pace" on Fridays. In January, after discovering that some of the programs related directly to his communications unit, he selected a cluster of four programs.

Rather than being relegated to Fridays these were interspersed wherever appropriate and students were held responsible for them on the unit evaluation. ThinkAbout essentially became an integral part of a larger whole--the communications unit. In February and March five more programs were selected and shown on Fridays. After Spring vacation Mr. Cartwright chose to substitute value clarification activities for ThinkAbout programs. His classes viewed 13 ThinkAbout programs over 5 months.

Mr. Cartwright did not preview ThinkAbout cassettes, but he prepared extensively for each program. Finding the suggestions in the teacher's guide "too general and abstract," he created his own introductory and follow up activities.

The programs themselves completely captured the students' attention. Mr. Cartwright watched intently as well, and sometimes he stopped the programs to emphasize a particular point.

To illustrate how he taught . . . Mr. Cartwright introduced the program "Why Bother?", a program about the importance of having and using alternative sources for information, by noting that report-writing was a regular activity and that the encyclopedia was not the only source worth using. During the viewing of the program he would stop the cassette to clarify something in the program or connect it to current work or even to write program ideas on the board. Immediately following the program, the class reviewed Mr. Cartwright's notes and generated an extensive list of information sources (including television). The lesson was brought home to his students when he passed out the standard history text and asked them to look in the index for George Washington Carver, one of the program's characters. Surprised and confused, they could not find a listing for him. Then, striding about the room, he passed around his supplementary text on Black history and asked them to repeat the exercise. Success obvious on his face and theirs, "That's why," he said, "you should not limit yourself to only one source."

His "lead-ins" ranged from 10 to 20 minutes and usually included a general rationale, a specific reason for watching, opportunities for student participation, and an explicit emphasis on the key teaching points.

For a program on "People Patterns," Mr. Cartwright introduced the notion of patterns by calling on volunteers to draw, identify and continue drawing a pattern of triangles and circles. And then worked with his students to develop definitions of patterns prior to viewing.

Mr. Cartwright consistently linked ThinkAbout programs to the rest of the students' academic or personal life. Memory tips were connected to academic tasks in social studies and science classes; "estimation" was linked to 6th grade camp experiences; "collecting information" was associated with forthcoming reports, and Mr. Cartwright frequently incorporated specific ThinkAbout terminology into other lessons and contexts. The terms "patterns," and "sender" and "receiver," became an integral part of his and his students' classroom vocabulary following the program.

Mr. Cartwright has been avidly using television and film in his teaching and he gives ThinkAbout a particularly high rating. He appreciates its technical quality and its sensitivity to racial issues. Moreover, he says,

> "It doesn't talk down to the kids at all . . . The kids get involved with the story and are able to identify with it . . . And it's not didactic teaching--such as a narrator coming on and saying this is how you memorize things or this is how you do a research project. The kids have enough of that . . . that's what teachers do most of the time . . ."

Ms. Hausman

Ms. Hausman is a certified elementary teacher who works by choice as a library aide in a small, racially-balanced suburban school. She finds the job "satisfying" because it enables her to work in an instructional setting with all grade levels but does not require the advanced planning that might impinge on the time she wants to spend with her own children.

At the principal's suggestion, Ms. Hausman's predecessor in the library used instructional television extensively, and Ms. Hausman has continued the practice. The principal is happy with the arrangement because he believes that there are valuable television programs for his students but that his regular classroom teachers are too busy with their own lessons and grading to use them. Ms. Hausman is pleased because she believes that instructional television can be effectively used without preparation at home. Instructional television is also quite convenient in that the library has its own video cassette equipment and enough space for a small separate area for viewing.

After attending a workshop on ThinkAbout run by the district's media department in October and learning that video cassettes were available, Ms. Hausman enthusiastically and immediately adopted the series for her 5th graders, who have "Library" for 30 minutes every Friday. She showed the first ThinkAbout program in early November, and continued almost weekly until mid-May when the library closed. While she was using the preliminary guide, she was unaware that there were a total of 60 programs and she simply followed the sequence. With the new guide came the recognition that she would be unable to view them all and the decision to be selective.

Every Friday at 10:00 a.m. a group of 16 5th graders would file downstairs to the library for ThinkAbout, and when they left at 10:30, the second group of about 18 came in.

Both groups would automatically head for the small video classroom corner, sit down on the carpet and wait for Ms. Hausman and ThinkAbout. Ms. Hausman consistently prepared for their arrival by previewing the cassettes and by reading the before and after suggestions in the teacher's guide. Many times she prepared her own introductions and follow up activities; sometimes she followed the guide closely; occasionally she labeled herself "unprepared" and developed her remarks spontaneously. However, her 2 to 5 minute introductions were usually far more developed than those in the guide and in each she attempted to relate the program to the students' experience, to stimulate interest, to give something to watch for and hit key points. The latter sometimes proved to be a problem.

With the children sitting closely together on a carpet, there was invariably some elbowing, touching, and complaints of "he's bothering me" throughout the ThinkAbout session. During the actual viewing time, however, these disruptions were held to a minimum because students were generally engrossed in the programs. Occasionally one student would be braiding hair or drawing circles on the back of another but their eyes were glued to the television screen. Students consistently laughed or sighed at appropriate places and there were groans and "Oh shoots" when the programs were over.

In the 10-15 minutes remaining, Ms. Hausman usually conducted a discussion but on several occasions she displayed frustration with the discussion process. Sometimes feeling unable to develop a program's ideas, she dismissed the students 5 to 10 minutes early. At other times she spoke directly of her failure to get beyond the story line to the program's teaching points.

Because the regular 5th grade teachers showed no interest in ThinkAbout and because she strongly believed that reinforcement and follow up were essential, Ms. Hausman attempted to make linkages wherever possible among programs, clusters and between ThinkAbout and class assignments. For instance, program to program connections usually went this way: "Last week you remember we were talking about classifying objects. Today's program will be about Leah, who has to classify information for a report." In order to link programs to the rest of the students' curriculum, she explicitly connected the ideas of collecting information to an ongoing plant unit in science, and the memory tip to upcoming oral reports. Despite these efforts, however, ThinkAbout in the library functioned essentially as a separate entity--much like art, music, and gym.

The students were enthusiastic about ThinkAbout, the regular 5th grade teachers noted that this was the first time students were excited about going to the Library.

Students regularly--and correctly--used ThinkAbout concepts and terminology. Phrases like "sender and receiver," "jumping to conclusions," "collecting and judging information" permeated their remarks.

Nevertheless, one of the fifth grade teachers remarked,

> ". . . We put a tremendous amount (of emphasis) on skills, stressing writing skills and how to get your ideas down on paper, so we can't say 'yes, ThinkAbout has really helped.'"

Ms. Hausman labeled the series "excellent" and "tops." The next time around, however, she hopes to improve the learning experience by preparing more carefully, using the video equipment to go back to key points for increased emphasis, and by attempting to involve the 5th grade teachers.

Most of the teachers were in self-contained classrooms.

Almost all the teachers had received promotional material on the series, but few had received training in its use.

Almost 1/4 of the teachers used the programs on videotape rather than as broadcast.

The average teacher spent about two hours per week viewing and discussing the series, and working on assignments related to it.

In the beginning more than half the teachers used ThinkAbout as an independent curriculum in reasoning skills, while the rest attempted to integrate it with existing curriculum areas. By the latter part of the year, most teachers had integrated it to some degree.

On occasion, programs were scheduled haphazardly or broadcast out of sequence, and these failings often affected teachers' attitude toward the series. Although they may not recur after the first year, they nonetheless had an impact.

Great variations were observed in the ways ThinkAbout was used: how it was made part of the curriculum, how teachers prepared instruction for it, and how they gave the students opportunities for skill development beyond those offered in the broadcast programs. There were variations also in the instructional quality of the discussions about the series.

Observations and reports from teachers, confirmed by case studies, identified a need for in-service activities and other kinds of sustained support. In the May 1980 survey, 90% of the 460 respondents reported using the teacher's guide. The additional materials most desired were duplicating masters or worksheets.

Several barriers to the fullest use of the series were observed in the case studies. The barriers included special events (such as conferences), other curricular priorities, substitute or student teachers,

insufficient time for planning, and inadequate preparation for teaching thinking skills.

Students perceived television in the classroom differently than teachers did. Students perceived it often as a break from work, teachers as just another method of instruction. In the classrooms observed, the students were not held accountable for viewing ThinkAbout. There were few if any assignments, tests, or projects--graded or ungraded--pertaining to it. Moreover, formal arrangements for the students to work together on what they had seen in the programs to apply any newly learned skills were seldom seen or reported.

Students and some teachers appeared to lose sight of the series' goals as the school year progressed. The programs became isolated events, independent of the series as a whole.

In classroom discussions, as described in the case studies, many students talked about experiences of their own that related to the programs' storylines. They seemed to enjoy talking, but few of them were good listeners.

Impact

The following observations on the impact of ThinkAbout were derived from the data collected in the tests, surveys, and case studies:

The ThinkAbout programs captured the attention of virtually all the students and the teachers who viewed them. The teachers found them highly appealing and reported that their students felt the same. The case study reports documented the students' viewing behaviors; the surveys, and the questionnaires given in the testing study, recorded positive reactions by both teachers and students. Of the 94 teachers using ThinkAbout in the testing study who responded to the questionnaire, 93 agreed

or strongly agreed that the programs were interesting and 89 agreed or strongly agreed that they were uniformly high in quality. This finding was consistent with the survey results. It appeared not to vary either with type of teacher or with type of student.

The ThinkAbout programs and the accompanying materials stimulated classroom discussions of reasoning skills, which as a rule are not systematically covered in the fifth and sixth grades. Teachers regarded this addition to the curriculum as beneficial. Other curricular changes effected by the series were described in the case study reports. In the testing study, 85 of the 94 ThinkAbout users who responded to the questionnaires agreed or strongly agreed that ThinkAbout extends the range of experiences available to students, and 72 of 93 agreed or strongly agreed that it presents material not commonly available. In the January 1980 survey, 84% of the 489 respondents agreed or strongly agreed that ThinkAbout presents complex ideas in 15 minutes better than the teacher can, and 88% agreed or strongly agreed that it aroused discussion in class. This finding appeared not to vary with type of teacher or of student.

Teachers perceived that, as a result of using ThinkAbout, students improved in each of the thinking skills that it covers. In the May 1980 survey, about 50% of the 460 respondents reported a high or very high degree of success in strengthening students' abilities in problem solving, systematic reasoning, flexible thinking, effective expression, independent learning, and the management of their own learning. About 40% reported neither a high nor a low degree of success in each. Ninety-three percent agreed or strongly agreed that ThinkAbout was high in educational effectiveness.

In May 1980, the teachers in the testing study were asked to indicate on a five-point scale the degree to which their students had learned each of 32 skills from ThinkAbout. Almost all the responses fell in the middle of the scale, indicating a moderate impact in each case.

These findings appeared not to vary with type of teacher or of student.

On two of the four tests that were created to examine the unique goals of ThinkAbout, the classrooms that used the series showed more change, and patterns of better performance, than those that did not. On exercises in communications skills and independent learning, the students who had viewed the series were able to provide more alternatives in problem settings than the students who had not. These findings were consistent with data gathered in Covington's productive-thinking project, with research on other thinking skills curricula, and with research on the cluster "Collecting Information" conducted by AIT.

On the two remaining tests, statistically significant differences appeared, but only in isolated cases; the patterns were not clear enough to show a consistent impact. On these tests, generally, the classrooms that used ThinkAbout and those that did not performed equally well and changed in similar degrees.

An examination of standardized test scores showed no systematic difference in level of performance or in degree of change between the classrooms that used ThinkAbout and those that did not. Both performed at generally the same levels of basic skills achievement, and ThinkAbout appeared not to affect their performance. This finding has several plausible explanations: (1) both sets of classrooms stressed basic skills anyway, so the addition of ThinkAbout contributed little to their achieve-

ment; (2) instead of using ThinkAbout to review and reinforce basic skills, instruction came to focus on reasoning and problem solving, so the time spent on the skills was not enough to affect test performance; and (3) ThinkAbout simply replaced part of the basic skills instruction already in the classroom curriculum.

Where ThinkAbout was used, no consistent relationship was found between the patterns of use (such as the time spent on discussions before or after the programs, or the number of programs watched) and test results. Since the results varied little from classroom to classroom, the correlations here were extremely low.

Implications and Reflections

The productivity of a research project like this is measured by its results--its insights and its implications for the future. In this connection, it will be instructive to summarize what we now know about ThinkAbout.

Before the research study, we did not know how the series would be introduced or used, or what its effects would be. We used a broad spectrum of student tests, naturalistic observations, and teachers' self-reports to discover the changes in classrooms, teachers, and students that took place in the series' first year. We received some clear messages about what happened.

The most striking change was the change in curriculum--what lessons were being taught--in the user classrooms. Topics were covered that ordinarily were not covered, and many teachers reported their sustained use of the series. They used it in a variety of ways, with the variety of results that one would expect. There are many types of ThinkAbout users--from the casual to the committed, from those attracted by its novelty

to those who will continue using it for years to come. This variety was captured in the case study reports.

The school and classroom context of instructional television affects its introduction and use. The philosophies of administrators and the daily schedules of teachers shape curriculum priorities. The many seemingly crucial events in students' lives vie for their attention. This context, which is both instructional and social, helps explain many of the research findings. In addition, understanding it will better inform one's expectations for other school television series.

Several pedagogical lessons were learned from this research. The positive reactions by teachers and students to the actors in ThinkAbout, the storylines, the teacher's guide, and televised instruction in general served to support the decisions made in designing and producing the series. Still, organizers within programs and outside support materials were found necessary to reinforce the purposes of particular programs and to re-emphasize the scope and sequence of the series as a whole. Making students accountable for watching the series--through assignments, projects, tests, and grades--could affect its instructional impact. Needs were found also for teacher in-service work beyond the one- or two-hour introductory workshops and for extended in-service programs about the theoretical basis of ThinkAbout and about methods of teaching thinking processes. The staff development efforts necessary to structure and stimulate discussions that would hit the main points of the series were suggested in the case study reports. Finally, the desire of teachers for more support materials can guide instructional designers.

The research study points to some new directions for studying ThinkAbout and other series. For example, the case studies suggest new methods

for measuring student impact. One method is to use performance measures in grading student projects that model activities demonstrated on the screen. Both the projects and the processes used in doing them would be valid measures of achievement with respect to the ThinkAbout curriculum. Another method is to interview the teachers who judged ThinkAbout educationally effective in order to identify the basis for their judgment. Those experienced in using the series may guide the development of measuring instruments to document the changes they have observed in their students.

Yet a number of questions remain, or arose during the study. For example, what will the impact of the series be in successive years of use? And what will the patterns of use be? Classroom activities, especially, may be very different once the teacher has experience with the ThinkAbout curriculum. The possible uses of the series should be examined to discover how the skills associated with it are affected by varying the teaching method, by restructuring other curricula to emphasize the goals of the series, and by using student projects to teach its concepts and processes. And since it is most often teachers who make the decision to use the series, the differences in their reasons for using instructional television, in the value they place on it relative to competing activities, in their reasons for continuing to use it, and in their levels of commitment all warrant further research. Such research will not only shed light on ThinkAbout but also help us to understand better the possibilities and the limits of instructional television, and how television-assisted curriculum projects are adopted in schools.

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